

Applicants: Hirvonen et al.
Application Serial No.: 10/538,193
Filing Date: April 21, 2001
Docket No.: 187-95 PCT/US
Reply to non-final Office Action mailed March 30, 2006
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REMARKS

Pursuant to the Office Action mailed March 30, 2007, Applicants request reconsideration. To further prosecution of this application, each of the issues raised in the Office Action is addressed herein.

Claims 1-23 are currently pending in this application, of which Claim 1 and Claim 17 are independent claims. The application as now presented is believed to be in allowable condition.

Claim Rejections under 35 U.S.C. §103

Claims 1, 8, 9, 11-20, and 23 were rejected as being obvious over U.S. Patent No. 6,021,315 to Telewski (*Telewski*) and U.S. Patent No. 3,383,630 to Kuroda (*Kuroda*).

The present invention is directed to an arrangement for testing a radio device, which includes a waveguide closed at both its ends and comprising a holder arranged to hold the radio device at least partly inside the waveguide in such a manner that the radiating part of the radio device remaining outside the waveguide is entirely inside the holder. The waveguide includes one or more ridges, the end of at least one ridge facing the holder being bevelled, and one coupling inside the waveguide for transmission and reception of a radio-frequency signal by the use of a wideband mode of propagation.

The present invention is also directed to a method of testing a radio device, wherein the radio device to be tested is mounted by means of a holder at least partly inside a waveguide closed at both its ends. The method includes generating a wideband mode of propagation in the waveguide by means of at least one ridge, wherein the end of at least one ridge facing the holder being bevelled. The method also includes transmitting and receiving radio-frequency signals by using the wideband mode of propagation between the radio device and a coupling installed in the waveguide.

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Regarding Claims 1 and 17, the Office Action indicates that *Telewski* discloses a system and method for testing wireless communication RF devices (10, Figure 5b) that includes a waveguide (102, Figure 5b) closed at both ends (Figure 1) and a cradle (152, Figure 4c) or holder arranged to hold the radio device 10 inside the waveguide in such a manner that the radiating part of the radio device remaining outside the waveguide is entirely inside the holder 152. The Office Action also indicates that *Telewski* discloses an antenna (12, Figure 13) coupled inside the waveguide for transmission and reception of a radio frequency signal.

Although the Office Action concedes that *Telewski* does not disclose that the waveguide includes one or more ridges and that the end of the ridge facing the holder is beveled, it indicates that *Kuroda* teaches an electromagnetic wave transmission device having a wave gun with ridges (4 and 4', Figure 8) and that the end of the ridge facing the holder is beveled (5 and 5', Figure 8; column 2, lines 11-20). Therefore, the Office Action indicates that it would have been obvious to combine the features in *Telewski* and *Kuroda* to prevent reflection of the signal into the waveguide, as taught by *Kuroda*, to "minimize the whole electromagnetic transmission for providing small size microwave for better test result".

However, it is respectfully submitted that the waveguide 102 shown in Figure 5b of *Telewski* is not closed at both ends and the RF sealed enclosure 4a in Figure 1 is not a waveguide, since it does not direct an RF signal in a direction determined by its physical boundaries. Rather, the enclosure 4a merely seeks to prevent leakage of signals by sealing the box 4, which makes for a "very heavy and cumbersome apparatus with a door" that is always "a source of potential RF leakage", as described at column 1, lines 30-55. In addition, an RF signal in the sealed enclosure 4a shown in Figure 1 is not able to "propagate as an electromagnetic wave", as disclosed at paragraph 9, pages 2-3 of the specification. Further, the use of ridges in the waveguide and beveling on at least one ridge facing the holder, as defined by Claims 1 and 17, are used to achieve a broadband mode of propagation, as disclosed at paragraph 25, page 8 of the specification, rather than for preventing "reflection

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into the waveguide...to minimize the whole electromagnetic transmission for providing small size microwave for a better test result", as indicated at page 3 of the Office Action. Yet further, *Kuroda* does not incorporate a holder, and thus *Kuroda* cannot disclose that "the end of the ridge facing the holder is beveled", as defined by Claims 1 and 17.

Regarding Claims 15 and 16, the Office Action indicates that *Telewski* discloses a cradle 152 that can be inserted inside the waveguide, which is equated to a holder that is detachably attachable to the waveguide using insertion tools (150, Figure 4c) attached to the waveguide for physical contact with the interior of the waveguide (Figure 4c; column 9, line 9-25). However, it is respectfully submitted that neither the insertion tool 150 nor cradle 152 is attachable to the waveguide 102, and that the cradle 152 is merely a portion of the insertion tool 150 that rests on the inside of the waveguide 102 rather than being attached to any part of the waveguide 102.

Claims 2-4 and 22 were rejected as being obvious over *Telewski*, *Kuroda*, and U.S. Patent No. 6,088,582 to Canora et al. (*Canora*). Specifically, the Office Action states that *Canora* teaches a rectangular waveguide (300, Figures 6-8) having walls, which it equates to pegs made of conductive material, and that an electromagnetic wave, such as a radio signal, can be propagated on the side walls making the plurality of side walls act like pegs (Figure 6; column 6, lines 46-52). However, it is respectfully submitted that nothing in *Canora* would teach or suggest the use of pegs, nor that the walls function as pegs.

Claims 5 and 6 were rejected as being obvious over *Telewski*, *Kuroda*, and U.S. Patent No. 6,021,315 to Fehrenbach et al. (*Fehrenbach*). The Office Action indicates that *Fehrenbach* teaches layers of absorption material (or wave dampening material 29, Figure 6) formed inside the waveguide with strips (Figure 6; column 6, lines 51-54). However, it is respectfully submitted that nothing in *Fehrenbach* would teach or suggest the use of strips, but only that wave dampening material 29 is used inside the waveguide. In addition, as *Fehrenbach* is directed to a device for measuring the height of filling material in a container, it is respectfully submitted that *Fehrenbach* represents non-analogous art that

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cannot be considered reasonably pertinent to the present invention, which is directed to a method and device for testing a radio device, and thus should not be available as a reference.

Claims 7 and 10 were rejected as being obvious over *Telewski, Kuroda*, and U.S. Patent No. 6,188,365 to Mattsson et al. (*Mattsson*). Specifically, the Office Action indicates that *Mattsson* teaches a testing device having a waveguide that is closed at both ends with dimensions determined by the size of the test device and the frequencies being tested. However, it is respectfully submitted that there is no suggestion in *Mattsson* regarding the length of the holder being selected in a manner preventing radio-frequency radiation from propagating from the end of the holder opposite to the waveguide, as defined by Claim 7.

Claim 21 was rejected as being obvious over *Telewski, Kuroda*, and U.S. Publication No. 2002/0127971 to Chen et al. (*Chen*). The Office Action indicates that *Chen* discusses an RF device testing method, in which calibration is performed using a grounded antenna (130, Figure 2) having grounded circuits (130 and R4, Figure 3). However, it is clear from Figure 3 that it is the tuning member 118 and not the antenna 130 that is grounded. Further, it is respectfully submitted that there is no suggestion in *Chen* to use a reference unit (radio device) with a grounded antenna circuit for calibration, as defined by Claim 21.

Hence, for at least the reasons stated above, Claims 1-23 patentably distinguish over the prior art of record. Therefore, it is respectfully requested that the rejection of Claims 1-23 under 35 U.S.C. §103(a) be reconsidered and withdrawn.

Conclusion

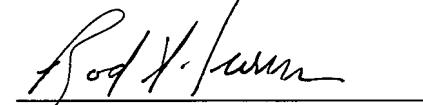
Favorable reconsideration and allowance of pending Claims 1-23 are solicited.

In view of the foregoing remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after these remarks, that the application is not in condition for allowance, the Examiner is

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requested to call the Applicants' attorney at the telephone number provided below to discuss any outstanding issues.

Respectfully submitted,



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